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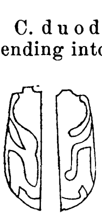
C. duodecim-guttata occurs everywhere in the Pacific regions, extending into the valleys east of the Sierra Nevada.



C. hyperborea Lec. has been sent me by Mr. Wm. M. Gabb, from the coast range near Santa Cruz. The markings of this species vary in their width. The two specimens in my cabinet have the markings distinct, while two in the cabinet of Dr. Le Conte have the humeral lunule and the middle fascia so expanded as to become confluent. I give a figure of the two varieties, with a view of completing the series of illustrations of our species.

C. pusilla Say was abundant in Owens Valley, in the beds of streams.

C. hæmorrhagica Lec. occurred with the last. It is remarkable that a species hitherto found only on the sea coast at San Diego, should occur so far inland.

C. imperfecta Lec. has been sent me from Fort Vancouver, Oregon.

C. guttifera Lec. occurred in tolerable abundance at Fort Grant, on the San Pedro river, Arizona.

Tetracha carolina Hope occurred rather abundantly at Fort Yuma, under chips, etc., on the borders of the Colorado. This insect has now been found at almost every point from the central Atlantic coast of the United States to Cape St. Lucas, at the southern extremity of Lower California. It is probably found along the greater extent of western Mexico. For this and many other species from this interesting region, I am indebted to Capt. John E. Hill, of California.

Descriptions of some new genera and species of Central American COLEOPTERA.

BY GEO. H. HORN, M. D.

MACROPNUS.

Gen. Ch.—Mentum quadrate, sides moderately rounded, slightly emarginate anteriorly. Labial palpi small, last joint ovoid, acuminate. Maxillæ armed internally with six sharp teeth in two rows, palpi moderate, last joint larger, ovoid, slightly curved, and grooved above. Mandibles tridentate at the extremity, with a somewhat flattened, vertical, slightly recurved tooth on the upper surface. Epistome parabolic, slightly margined, broader than the front, from which it is separated by a slightly sinuate suture. Thorax convex, sides strongly rounded, base moderately lobed, angles distinct, the anterior more prominent. Scutellum moderate, twice broader than long. Mesosternum produced, plane. Elytra very convex, suboval. Legs robust, anterior tibiæ tridentate. Tarsi shorter than the tibiæ, last joint with an angular process beneath. Claws unequal, the outer more robust and forked. Pygidium large, convex, vertical.

Males.—Posterior coxæ very large and very prominent internally. Trochanter prolonged into a spine, curved inwardly. Femora broad, oval, bidentate on their lower edges, flat internally, convex externally. Posterior tibiæ stout, arcuate, densely pubescent internally, obliquely rugose and deeply punctured externally, obliquely truncate, inner angle much produced.

crassipes, yellow, shining, head finely but sparsely punctured. Thorax densely and finely punctured, with larger punctures at irregular intervals. Elytra finely and densely punctured, obsoletely striate punctate, towards apex more coarsely punctured. Beneath brown, scarcely shining, moderately punctured and sparsely flavo-pilose. Length 1·07 inch.

Honduras, Dr. J. L. Le Conte. This beautiful insect has been for some years in the Academy's cabinet. I have till the present deferred its description, with the hope that in some of the many memoirs on the insects of Mexico and the adjacent regions, its description might be found. The characters above given render it inadmissible in any of the groups of the true Rutelides, combining the characters of two groups in a manner rendering it inadmissible in either. The horizontal labrum and posterior margin to the thorax define it as a true Rutelide.

Two groups form this tribe, Pelidnotæ and Areodæ, characterized mainly by the absence of the frontal suture. The present genus can enter neither group, as the presence of the frontal suture excludes it from the former, while the forked tarsal claws exclude it from the latter, while the form of the mandibles serves to distinguish it from either. By a modification of the characters of groups of Areodæ of Lacordaire, it might enter here to form the analogue of Macropoides, of the Pelidnotæ. I prefer, however, separating it entirely, to form an intermediate group. With this view the Rutelidæ veræ may be thus tabulated:

Epistome not distinct from front.. Pelidnotæ.
Epistome separate from front.
    Mandibles tridentate; outer tarsal claws forked............. Macropni.
    " simple; " " simple............. Areodæ.

In addition to the above characters, it might be mentioned that the front is twice as broad as long, the eyes large and convex, the epistome much broader than the front, forming the canthi of the eyes by the posterior angle. The head is short, being a third broader than long, and is deeply set in the thorax, causing the eyes to be partially hidden by its anterior angles. The mesosternal spine is moderate, flattened, and slightly grooved beneath. The large posterior coxæ depress the plane of the metasternum below that of the abdomen. Metasternum truncate posteriorly and vertical. Posterior coxæ separate. The abdomen forms an abrupt convexity beneath, thus causing the pygidium to assume a rather more acute form than usual. The pygidium is very convex from above downwards, and finely granulate, presenting a more rugose appearance than any other portion of the insect. The species resembles our Cotalpa lanigera in form, being, however, slightly more elongated, though less elongated than either of the Areodæ.

A single specimen, a male, from which the above description has been taken, exists in the cabinet of the Academy.

BRANCHUS Lec.

obscurus, oval, slightly convex, black and opaque, sparsely covered with short black erect hair, head very densely and coarsely punctured, front transversely and longitudinally impressed; thorax one-third broader than long, densely and coarsely punctured, narrowed anteriorly, and emarginate; sides broadly rounded, slightly emarginate in front of posterior angles, which are but slightly produced and rounded; base rounded at the middle, emarginate on each side. Thorax above with a median slightly elevated line, and two foveæ; on each side of the median line are four slightly oblique elevated ridges, arranged in anterior and posterior pairs. Elytra subcostate, with densely placed elevated granulations towards apex indistinctly foveate. Beneath smooth shining, scarcely punctured.

Long. ·55, lat. ·30. Nicaragua.

Differs from the other species by its less convex form; the sides of thorax are also slightly emarginate before the angles. The elytra have a distinct ridge continuous with the thoracic margin and extending very nearly to the apex. The species of this genus may be divided into two groups; *floridanus* Lec. has the thorax very convex, while in *woodii* Lec. and *obscurus* Horn the thorax and elytra are rather depressed.

ANECTUS n. g.

Generic characters as in Branchus Lec., with the following exceptions: Antennæ more slender and elongate, the ninth joint rather suddenly dilated. Mentum trapezoidal sides less rounded and less emarginate anteriorly. Gular peduncle smaller, with the median notch hardly evident. Anterior tibiæ slightly emarginate at apex, outer angle not prolonged externally. Intercoxal process of abdomen rectangularly truncate.

This genus, indicated but not named by Le Conte (Class. Col. N. Am.), may be readily distinguished by the preceding characters from Branchus.

vestitus, oval, very convex, black and opaque, densely clothed with short ochraceous pubescense. Head very densely and coarsely punctured, front triangularly impressed, epistome ferruginous; thorax at base one-half broader than long, densely and coarsely punctured, much narrower anteriorly and broadly emarginate; sides broadly rounded, at base broadly lobed; posterior angles slightly produced; above with a slight transverse impression terminating in two fovæ, and four oblique slightly elevated lines arranged in anterior and posterior pairs. Elytra very convex, obscurely costate and foveolate; marginal ridge not reaching the apex. Beneath finely and sparsely punctured.

Long. ·63, lat. ·35. Honduras. Cabinet of Dr. Le Conte.

This species is much more convex and more regularly oval than any of the other Branchini. The legs are also more slender, and the insect has the appearance of being able to move with considerable rapidity.

The tribe Branchini presents some difficulties regarding its proper classification. The prominent ligula points to some affinity with the Praocini, but as this organ is undoubtedly retractile, and capable of being protruded, its value as a means of classifying the tribes of the Asididæ seems hardly apparent. The removal of certain tribes and parts of tribes (Scaurini pars, Blaptini, Pimeliini, Molurini pars, Pedinini, Opatrini and Trachyscelini,) this great subfamily becomes more homogenous and capable of classification. The tribes above mentioned have the posterior margins of the third and fourth ventral segments coriaceous,—a character of great value in the subdivision of the family Tenebrionidæ.

The Branchini seem to have closer affinities with the Asidini and Nycteliini. The prominent emarginate labrum, the contour of the front, and the slightly channeled tarsi seem to point toward the Asidini, while the broad emarginate and fissured gular peduncle and the form of the maxillary palpi indicate their affinity with the Nycteliini. The form of the antennæ serves to distinguish it from both tribes, the eleventh joint being as large as the preceding, depressed, and rounded at the extremity.

The following table will serve to distinguish the tribes of the subfamily Asididæ, characterized by the presence of a trochantin to the middle coxæ, and the hind margins of the ventral segments entirely corneous:

Head rhomboidal, narrowed behind. 1.
" short, not narrowed. 2.
1. Labrum prominent. Thorax emarginate.............. Akisini.
Labrum partially concealed. Thorax scarcely emarginate.. Cryptoglossini.
2. Last joint of maxillary palpi securiform.............. Asidini.
" " " " not securiform..........
Gula sulcate. 3.
" not sulcate. 4.
3. Antennæ slender, last three joints broader............ Branchini.
Antennæ robust, last joint generally smaller .... Nycteliini.
4. Maxillæ unarmed.. Physogasterini.
Maxillæ with a corneous hook.
Scutellum large, covering in great part the mesothoracic peduncle...................................... Molurini.

Scutellum small or absent, situated between the elytra.
  Mesosternum and intercoxal process of abdomen broad .... Praocini.
  Mesosternum and intercoxal process of abdomen narrow triangular.............................. Coniontini.

Certain tribes admitted into this subfamily by Lacordaire have been separated entirely. The Scaurini and Scotobiini have been separated from Cryptoglossini, and the genera allied to Eulabis removed from association with Nyctoporis, and Cerenopus from Cryptoglossa. The Sepidiini have been removed from the Molurini. The genus Ogcoosoma must probably also be removed from association with Moluris and Psammodes. The validity of the removal of certain tribes and groups from the Asididæ as received by Lacordaire, appears to be still further substantiated by an examination of the manner in which the pores of special sensibility are distributed on the terminal joints of the antennæ.*

While examing the Nycteliini in the collection of the Academy, I found under *Gyriosomus* a species named "*multilineatus* Melly," which does not belong even to the subfamily. I can find no reference to such a species, and no genus into which it may properly be received. The hind margins of the third and fourth ventral segments are coriaceous. This insect should undoubtedly form a new genus near *Gonopus* and *Anomalipus*, with which it has many points of resemblance. The following table of the three genera exhibits their relations :

Epistoma trapezoidal, broadly emarginate........................ Gonopus.
" rounded, triangularly "
Epipleuræ indistinct, body very convex .... Ectatocnemis.
" broad, body flattened above and margined........ Anomalipus.

In the genus above indicated the last joint of the antennæ is very small, the anterior tibiæ much more flattened than in *Anomalipus*, and have the external apical angle prolonged into a tooth, and a median tooth to both anterior and middle tibiæ. The tooth existing on the posterior edge of the apex of the anterior tibiæ in *Anomalipus* is not present in this genus. The prosternum between the coxæ is bisulcate, as in the other genera, and declivous in front and not lobed as in *Gonopus*.

The species, for which I retain the name above given, is very robust. Head broad, moderately coarsely punctured, with a vague impression each side of the emargination. Thorax one-half broader than long, very convex, densely and coarsely punctured, narrower in front, broadly emarginate; sides strongly rounded, narrowing posteriorly, angles acute, slightly prolonged, base emarginate. Elytra broadly oval, very convex, humeri obtuse, partially covered by the posterior angles of the thorax, costate, intervals with a less distinct elevated line, on each side of which is a row of elevated points.

The female is larger and more robust than the male, and the apical tooth of the tibia broader and more obtuse.

Length ·9 inch. · "Coquimbo."

RHINANDRUS Lec.

elongatus, elongate, black, subopaque, head long, very finely and sparsely punctulate, thorax opaque, not punctured, scarcely longer than broad, truncate anteriorly; sides rounded, slightly margined, base truncate, angles of thorax not prominent, the posterior rectangular. Elytra elongated oval, convex, one-half broader at middle than the thorax, base scarcely emarginate, not broader than the base of thorax, humeri prominent, deeply light striate, and, with the marginal, deeply punctured; interstices elevated, scutellar stria short, distinct and punctured. Beneath smooth, very finely punctured.

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* This character, in its application to this family, was first pointed out by Schiœdte (Annals and Magazine of Nat. Hist. Mch., 1865, p. 192, note). Its true value is not yet fully determined, but from the few observations made by myself it promises to be, at least, a very useful character in fixing the relationships of genera, the positions of which are still in some doubt. I have but casually mentioned this character, hoping to have leisure to develop it in its application to our North American genera at some future day.

Long. ·78 ♂, ·90 ♀. Yucatan and Nicaragua.

Very distinct from the species described from Cape St. Lucas by the characters above given. The thorax is evenly rounded, the posterior angles rectangular, without being prominent as in *gracilis* Lec. The base is finely margined by a line not reaching the angles; in front of this a slight transverse elevation, in front of which is an indistinct transverse impression. In the female these characters are better marked than in the male. The antennæ are shorter and much more robust; in the male they equal in length the head and thorax. The front is deeply notched both in male and female, exposing the connecting membrane between the epistome and labrum, exhibiting sexual characters similar to Zophobas. The anterior tibiæ of the male are clothed internally near the tips with a dense, short pubescence. In this species the prosternum is slightly produced behind the coxæ, acute. Mesosternum declivous and broadly channeled.

Between this genus and Zophobas there appear to exist close affinities.

On the Consumption of Force by Plants in overcoming Gravitation.

BY THOMAS MEEHAN.

Every one interested in Horticulture knows how uncertain is the successful cultivation of the grape in the United States. The vines usually flourish well for a few years, but in most instances become the prey of numerous diseases before they attain any very great age.

In remarkable contrast with this general failure is the fact that grape vines growing over trees are generally healthy and fruitful to a remarkable extent. Branches from unhealthy vines on trellises, when they can get to ramble over the twiggy branches of a neighboring tree, resume the health and vigor lost by the parent or main vine.

These facts have had numerous observers, and are generally admitted. They have been frequently discussed in Horticultural journals; but every theory hitherto brought forward has been refuted. For instance, it has been suggested that the partial shade afforded by the tree benefitted the grape vine; but it is as perfect when growing over low bushes, on hot banks, exposed to high and dry temperatures, as when luxuriating among the shady branches of the tallest trees. Again, it has been suggested that as the vine is supposed to like a dry soil the roots of the tree tended to absorb superfluous moisture, and thus furnished the best conditions for the vine roots; but healthy vines are found on trees in impassable swamps: besides, the cases of branches from trellises before alluded to answer this supposition. Some have thought that as the foreign vine, growing under glass, thrives there so well principally on account of the humid atmosphere, the evaporation from the trees' foliage might benefit the vine growing over it; but it has been further observed that they grow as well over dead trees as over living ones: and so on, in like manner, every theory has been refuted, and the true reason unexplained.

I think Mr. Darwin's discovery of tendril motion will afford the key to this phenomenon, and enable us to form a new theory as to the origin and employment of force in vegetable growth.

Mr. Darwin has shown that the tendrils of plants are in continuous motion for a long time until they find something to cling to, when motion at once